

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
9 September 2005 (09.09.2005)

PCT

(10) International Publication Number  
**WO 2005/083061 A1**

- (51) International Patent Classification<sup>7</sup>: C12N 5/08, A61K 35/28
- (21) International Application Number: PCT/US2004/013747
- (22) International Filing Date: 4 May 2004 (04.05.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/543,607 11 February 2004 (11.02.2004) US  
60/544,038 12 February 2004 (12.02.2004) US
- (71) Applicant (for all designated States except US):  
**STEMCO BIOMEDICAL, INC.** [US/US]; 2810  
Meridian Parkway., Suite 148, Durham, NC 27713 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **GENTRY, Tracy**  
[US/US]; 118 Radcliff Cricle, Durham, NC 27713 (US).  
**FOSTER, Sandra, J.** [US/US]; 200 Founders Walk Drive,  
Morrisville, NC 27560 (US). **BALBER, Andrew, E.**  
[US/US]; 2608 Nation Avenue, Durham, NC 27707 (US).
- (74) Agents: **BLACK, Allen, C.** et al.; Alston & Bird LLP,  
Bank of America Plaza, 101 South Tryon Street, Suite  
4000, Charlotte, NC 28280-4000 (US).
- (81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.
- (84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).
- Published:**  
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: STEM CELL POPULATIONS AND METHODS OF USE

(57) **Abstract:** Populations of stem cells and methods for their isolation and use are provided. These stem cell populations comprise aldehyde dehydrogenase positive (ALDH<sup>br</sup>) cells isolated from bone marrow, and ALDH<sup>br</sup> CD105<sup>+</sup> cells derived from any stem cell source. These populations may also comprise cells expressing such surface markers as CD34, CD38, CD41, CD45, CD105, CD133, CD135, CD117, and HLA-DR, and/or are substantially free from such cell surface markers as CD3, CD7, CD 10, CD 13, CD 14, C1319, CD33, CD35, CD56, CD 127, CD 138, and glycophorin A. The population may also comprise cells expressing CD90. The stem cell populations of the invention are isolated from a stem cell source such as bone marrow, peripheral blood, umbilical cord blood, and fetal liver. Methods of the invention comprise isolating and purifying stem cell populations from stem cell sources, and methods of using these cells to reconstitute, repair, and regenerate tissues.



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